AMENDMENT TO THE CLAIMS

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1. (Cancelled)

2. (Cancelled)

3. (Previously Presented) A method of transmitting bidirectional communication data over a single optical fiber comprising the steps of:

transmitting a first NRZ data stream having a first clocking frequency from a first location to a second location by said optical fiber using a carrier having a selected wavelength of light;

receiving said selected wavelength of light from said first location at said second location and recovering said NRZ data stream;

receiving a second NRZ data stream having said first clocking frequency at said second location;

converting said second NRZ data stream to a Manchester coded data stream at a second clocking frequency which is a selected multiple of said first clocking frequency;

transmitting said Manchester coded data stream from said second location to said first location by said optical fiber at said selected wavelength of light;

receiving said Manchester coded data stream at said first location; and

converting said Manchester coded data stream to an NRZ data stream having said first frequency;

wherein said second clocking frequency is three times (3x) said selected clocking frequency, and said Manchester coded data stream includes three (3) pulses for each data bit and further comprising voting said three (3) pulses to determine at least two (2) equivalent pulses and

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providing an output NRZ data bit at said first frequency equivalent to said at least two (2) equivalent Manchester data bits.

4. (Previously Presented) The method of claim 3 wherein said selected clocking frequency is about 25 MHZ.

5. (Cancelled)

6. (Previously Presented) The method of claim 3 and further including the step of filtering said first NRZ data stream with a low pass filter prior to said transmitting step.

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7. (Previously Presented) Apparatus for transmitting bidirectional communication data over a single optical fiber comprising:

a first data source for providing a first electrical digital data stream coded as an NRZ data stream and at a selected clocking pulse rate;

a first light generator at a first location for generating light at a selected wavelength, said light generator connected to said first data source for receiving said NRZ coded data stream and for modulating light generated by said first light generator with said NRZ coded data;

an optical fiber extending from said first location to a second location for transmitting bidirectional light there between;

a first light detection device at said second location for receiving said light modulated by said NRZ coded data stream and for recovering said NRZ coded electrical digital data stream;

a second data source for providing a second electrical digital data stream coded as an NRZ data stream at said selected clocking pulse rate;

a source for providing clocking pulses at said selected clocking pulse rate;

a clock multiplier for multiplying said selected clocking pulse rate at least three times (3x);

a Manchester coding device connected to said clock multiplier for receiving said NRZ coded data stream and for converting said NRZ coded data stream at said selected clocking pulse rate to a Manchester coded data stream having pulses at a clocking pulse rate at least three times (3x) said selected clocking pulse rate;

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a second light generator at said second location for generating light at said selected wavelength, said second light generator connected for receiving said Manchester coded electrical digital data stream and for modulating light generated by said second light generator with said Manchester coded data stream;

a second light detection device at said first location for receiving said light modulated by said Manchester coded electrical digital data stream and for recovering said Manchester coded electrical digital data stream; and

a Manchester decoding device for receiving said Manchester coded electrical digital data stream and converted said received data stream to an NRZ coded data stream at said selected clocking pulse rate;

wherein said Manchester coded data stream includes three (3) pulses for each data bit and the Manchester decoding device is adapted to vote said three (3) pulses to determine at least two (2) equivalent pulses and provide an output NRZ data bit at said selected clocking pulse rate equivalent to said at least two (2) equivalent Manchester data bits.

8. (Cancelled)

9. (Cancelled)

10. (Previously Presented) The apparatus of claim 7 and further including a first low pass filter between said first data source and said first generator and a second low pass filter located after said first light detection means.

11. (Original) The apparatus of claim 10 and further including a first band pass filter between said Manchester coding device and said second light generator and a second band pass filter between said second light detection device and said Manchester decoding device.

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12. (Previously Presented) A method of bidirectional communication over a single optical fiber comprising the steps of:

transmitting over the optical fiber in a first direction first digital data in a first data code at a first clock frequency;

converting second digital data in the first data code to a second data code at a second clock frequency, the second clock frequency a multiple of the first clock frequency;

transmitting over the optical fiber in a second direction the second digital data in the second data code at the second clock frequency; and

converting the second digital data from the second data code to the first data code by setting each bit of the second digital data in the first data code equal to a majority of corresponding bits of the second digital data in the second data code.

13. (Previously Presented) The method of claim 12, wherein:

the step transmitting over the optical fiber in a first direction first digital data in a first data code at a first clock frequency comprises the step of transmitting NRZ data; and

the step of transmitting over the optical fiber in a second direction the second digital data in the second data code at the second clock frequency comprises the step of transmitting Manchester coded data.

14. (Previously Presented) The method of claim 13, wherein the second clock frequency is three times the first clock frequency, and the Manchester coded data includes three bits for each bit of second digital data in the first data code.

15. (Previously Presented) The method of claim 14, wherein the step of converting the second digital data from the second data code to the first data code by setting each bit of the second digital data in the first data code equal to a majority of corresponding bits of the second digital data in the second data code comprises the step of voting the three bits to determine at least two equivalent bits and providing an output NRZ data bit at the first clock frequency equivalent to the at least two equivalent bits.

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16. (Previously Presented) A system for bidirectional communication over a single optical fiber comprising:

means for transmitting over the optical fiber in a first direction first digital data in a first data code at a first clock frequency;

means for converting second digital data in the first data code to a second data code at a second clock frequency, the second clock frequency a multiple of the first clock frequency;

means for transmitting over the optical fiber in a second direction the second digital data in the second data code at the second clock frequency; and

means for converting the second digital data from the second data code to the first data code by setting each bit of the second digital data in the first data code equal to a majority of corresponding bits of the second digital data in the second data code.

17. (Previously Presented) A method of bidirectional communication over a single optical fiber comprising the steps of:

transmitting over the optical fiber in a first direction first digital data in a first data code;

converting second digital data in the first data code to a second data code so that the power spectrum of the second digital data in the second data code is substantially separated from the power spectrum of the first digital data in the first data code;

for each data bit of the second digital data in the first data code, including multiple corresponding data bits in the second digital data in the second data code;

transmitting over the optical fiber in a second direction the second digital data in the second data code; and

converting the second digital data from the second data code to the first data code by setting each corresponding data bit of the second digital data in the first data code equal to a majority of equivalent bits in the multiple corresponding data bits in the second data code.

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18. (Previously Presented) The method of claim 17, wherein:

the step transmitting over the optical fiber in a first direction first digital data in a first data code comprises the step of transmitting NRZ data at a first clock frequency; and

the step of transmitting over the optical fiber in a second direction the second digital data in the second data code comprises the step of transmitting Manchester coded data at a second clock frequency.

19. (Previously Presented) The method of claim 18, wherein the step of converting the second digital data from the second data code to the first data code by setting each corresponding data bit of the second digital data in the first data code equal to a majority of equivalent bits in the multiple corresponding data bits in the second data code comprises the step of the voting the three bits to determine at least two equivalent bits and providing an output NRZ data bit at the first clock frequency equivalent to the at least two equivalent bits.

20. (Previously Presented) A system for bidirectional communication over a single optical fiber comprising the steps of:

a first transmitter circuit configured to transmit over the optical fiber in a first direction first digital data in a first data code;

a first converting circuit configured to covert second digital data in the first data code to a second data code so that the power spectrum of the second digital data in the second data code is substantially separated from the first digital data in the first data code and to include multiple corresponding data bits in the second digital data in the second data code;

a second transmitter circuit configured to transmit over the optical fiber in a second direction the second digital data in the second data code; and

a receiver circuit configured to receive the second digital data in the second data code and convert the second digital data from the second data code to the first data code by setting each corresponding data bit of the second digital data in the first data code equal to a majority of equivalent bits in the multiple corresponding data bits in the second data code.

21. (New) A method of transmitting bidirectional communication data over a single optical fiber comprising the steps of:

transmitting a first NRZ data stream having a first clocking frequency from a first location to a second location by said optical fiber using a carrier having a selected wavelength of light;

receiving said selected wavelength of light from said first location at said second location and recovering said NRZ data stream;

receiving a second NRZ data stream having said first clocking frequency at said second location;

converting said second NRZ data stream to a Manchester coded data stream at a second clocking frequency which is a selected multiple of said first clocking frequency;

transmitting said Manchester coded data stream from said second location to said first location by said optical fiber at said selected wavelength of light;

receiving said Manchester coded data stream at said first location; and

converting said Manchester coded data stream to an NRZ data stream having said first frequency.